

AMENDMENTS TO THE ABSTRACT

Kindly replace the original abstract (page 13) with the enclosed substitute abstract.

ABSTRACT

A signal light pulse to be converted into a two-dimensional space signal and a reference ultra-short light pulse are directed to a dispersion ~~device 2~~, device, a second-harmonic is generated by introducing ~~an~~ a one-dimensional frequency light distribution obtained by ~~an~~ a one-dimensional Fourier transform ~~lens 5~~, lens, the second-harmonic is then subjected to time-to-space conversion through ~~an~~ a one-dimensional Fourier transform lens so as to obtain a light wave distribution, and the light wave distribution is then subjected to filtering by a time-frequency filter ~~11~~ provided on a filter plane ~~102~~ of ~~an~~ a one-dimensional space frequency filtering optical system and is further converted into a two-dimensional space signal ~~13~~ corresponding to a time-frequency expanded two-dimensional light distribution which represents a relation between time and frequency of the signal pulse light. Thereby, there is provided a specific technique of realizing ultra-fast conversion of signal form from time signal into two-dimensional space signal without any active-scan and also displaying the two-dimensional signal in a visible region with a temporally steady state.